

REMARKS

Claims 2-14, 16-26, 28-34, and 36-41 are pending in the application. Claims 2-14, 16-26, 28-34, and 36-41 stand rejected by the examiner. The examiner's rejections are addressed below in substantially the same order as in the referenced office action.

35 USC § 103 REJECTIONS

Claims 2-14, 16-26, 28-34, and 36-41 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Sharma et al. (US 6,003,620) in view of Collins et al. (5,209,104) and further in view of Sinclair (US 4,996,489).

The Examiner asserts that Collins et al. (Collins) discloses a method for desaturating a porous rock and for making electrical resistivity measurements including current-conducting electrodes (12,16) axially separated from voltage electrodes (17, 18) for measuring a characteristic of a porous rock for electrical resistivity. Since the Examiner also agrees that the other cited art fails to disclose the limitation of at least one receiver antenna axially disposed from at least one transmitter, the Examiner appears to conclude that the Collins electrodes 12, 16, 17 and 18 provide the claimed antenna and transmitter limitation to support a rejection of independent claims 8, 23, 30 and 38 as an obvious combination of the cited references.

Collins at column 4, lines 10-55 describes the apparatus that includes the electrodes 12,16,17 and 18. It is clear that the electrodes disclosed are in contact with the rock and/or fluid in the porous rock to complete an electrical circuit for making the measurements. The definition in Merriam-Webster Webster's Ninth New Collegiate Dictionary defines an electrode as 1) a conductor used to establish electrical contact with a non-metallic part of a circuit and/or 2) a semiconductor device element that emits or collects electrons or holes or that controls their movements. Webster's defines an antenna as 2) a metallic device (as a rod or wire) for radiating or receiving radio waves.

The circuit disclosed in Collins requires current flow through electrodes in contact with conductive media, i.e., the porous rock and fluid in the porous rock, which is consistent

with the definition of electrode. Rejected independent claims 8 and 23, however, claim at least one receiving antenna receiving electromagnetic radiation, which is consistent with the definition of an antenna. Moreover, the definition of an antenna excludes conductive contact, whereas the definition of an electrode requires contact. Thus, a claim limitation of an antenna does not mean an electrode.

Applicant respectfully submits that the proposed combination of references does not teach the invention claimed in independent claims 8 and 23 when read as a whole, because Collins does not teach an antenna axially displaced from a transmitter.

Rejected claims 2-7 and 9-14 depend from independent claim 8 and claims 16-22 and 24-26 depend from independent claim 23. Applicant submits that these dependent claims are non-obvious over the cited art for at least the same reason as stated above for the respective independent claim.

Independent claim 30 includes the limitations of at least two transmitters symmetrically arranged about at least two receivers. Independent method claim 38 includes the limitation enclosing the material in the cylindrical enclosure, wherein the enclosure includes a first transmitter antenna and a second transmitter antenna arranged symmetrically about a first receiver antenna and a second receiver antenna.

Applicant's response to the previous office action noted that neither the '620 reference nor the '489 reference teaches such a symmetrical arrangement of transmitter and receiver antennas. Applicant submits that Collins disclosure of electrodes does not supply such a teaching for the reasons set forth above. Consequently, the combination of the references does not teach every element of the invention claimed in these independent claims. Applicant respectfully submits that independent claim 30 and claims 28, 29 and 31-34 depending from independent claim 30 are patentable over the cited references. And independent claim 38 and claims 36,37 and 39-41 depending from claim 38 are likewise patentable over the cited art.


CONCLUSION:

For all of the foregoing reasons, Applicant submits that the application is in a

condition for allowance. No fee is believed due for this response. The Commissioner is hereby authorized to charge any additional fees or credit any overpayments to Deposit Account **02-0429 (414-16782-US)**.

Respectfully submitted,

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